

Claims

1. A remotely controlled controller for an electricity supply contained within a meter or an adapter arranged to be mounted between a demountable meter and a supply socket, the controller comprising:  
  
a temperature compensated paging receiver;  
  
a decoder for decoding control messages received via the paging receiver;  
  
the paging receiver and/or decoder having a unique address identifying an individual controller;  
  
a power switch for connecting and/or disconnecting power between the supply socket and a load; and  
  
a control arrangement for receiving decoded messages from the decoder and arranged to act upon control instructions included in the decoded messages to cause the power switch to connect or disconnect the supply socket to/from the load: wherein said messages have the format - a first set of ASCII check sum characters, followed by a second set of ASCII sub address characters, and a third set of ASCII command message characters.
2. A controller as claimed in claim 1 in which said first set comprises six characters.
3. A controller as claimed in claim 1 in which the second set comprises eight characters.

4. A controller as claimed in claim 1 in which said third set is a variable length string of characters.
5. A controller as claimed in claim 1 further comprising a reverse power lockout circuit arranged to monitor the voltage on the load side of the power switch when the switch is open and inhibit closing of the power switch when a voltage above a given threshold is detected.
6. A controller as claimed in claim 5 in which the message characters are alpha numeric characters.
7. A controller as claimed in claim 5 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
8. A controller as claimed in claim 7 in which the message characters are alpha numeric characters.
9. A controller as claimed in claim 6 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
10. A controller as claimed in claim 9 in which operation of the manual reset switch is enabled by received messages.
11. A controller as claimed in claim 5 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
12. A controller as claimed in claim 11 in which operation of the manual reset switch is enabled by received messages.

13. A controller as claimed in claim 7 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
14. A controller as claimed in claim 13 in which operation of the manual reset switch is enabled by received messages.
15. A controller as claimed in claim 13 in which the message characters are alpha numeric characters.
16. A controller as claimed in claim 15 in which operation of the manual reset switch is enabled by received messages.
17. A controller as claimed in claim 1 in which the message characters are alpha numeric characters.
18. A controller as claimed in claim 17 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
19. A controller as claimed in claim 17 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
20. A controller as claimed in claim 19 in which operation of the manual reset switch is enabled by received messages.
21. A controller as claimed in claim 18 further comprising a manual reset switch accessible outside the controller for resetting the power switch.

22. A controller as claimed in claim 21 in which operation of the manual reset switch is enabled by received messages.
23. A controller as claimed in claim 1 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
24. A controller as claimed in claim 23 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
25. A controller as claimed in claim 24 in which operation of the manual reset switch is enabled by received messages.
26. A controller as claimed in claim 1 further comprising a load current measuring arrangement, wherein when a load current greater than a preset value is detected by the load current measuring arrangement, the controller is arranged to open the power switch for a preset period.
27. A controller as claimed in claim 26 in which the message characters are alpha numeric characters.
28. A controller as claimed in claim 26 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
29. A controller as claimed in claim 27 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
30. A controller as claimed in claim 29 in which operation of the manual reset switch is enabled by received messages.

31. A controller as claimed in claim 29 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
32. A controller as claimed in claim 30 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
33. A controller as claimed in claim 26 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
34. A controller as claimed in claim 1 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
35. A controller as claimed in claim 34 in which operation of the manual reset switch is enabled by received messages.
36. A controller as claimed in claim 26 further comprising a manual reset switch accessible outside the controller for resetting the power switch.
37. A controller as claimed in claim 36 in which operation of the manual reset switch is enabled by received messages.
38. A controller as claimed in claim 36 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.

39. A controller as claimed in claim 37 arranged to receive messages containing instructions to alter conditions set within the controller and to act upon those altered instructions.
40. A controller as claimed in claim 1, in which the control arrangement extracts the control instructions from the decoded messages by means of a sliding window.
41. A system for remotely controlling the supply of electric power to customer premises comprising:

a central control computer programmed to produce control instructions for transmission to a controller contained within a meter or an adapter located between a supply socket and a demountable meter at each customer's premises, each controller having a unique identifier or belonging to a group with a single common unique identifier; wherein the central computer is programmed to produce a command message having the format - a first set of ASCII check sum characters, followed by a second set of ASCII sub address characters, and third set of ASCII command message characters, and

a paging system for transmitting the command message from the central control computer to each controller; wherein

each controller comprises a temperature compensated paging receiver, a decoder for decoding command messages addressed to that controller, a switching arrangement for connecting and/or disconnecting the supply socket to/from a load, and a control arrangement for receiving control messages from the decoder and arranged to act upon the instructions to

cause the switching arrangement to connect or disconnect the supply socket to/from the load.

42. A system as claimed in Claim 41 in which the first set comprises six characters.
43. A system as claimed in Claim 41 in which the second set comprises eight characters.
44. A system as claimed in Claim 41 in which the third set is a variable length string of characters.
45. A system as claimed in Claim 42 in which the second set comprises eight characters and the third set is a variable length string of characters in which the check sum is calculated according to a method having the following steps:
  - a) add together the ASCII value of each odd character position starting with the first character of the second set and continuing to the end of the third set,
  - b) truncate the result to 12 binary bits if necessary ( FFF hex),
  - C) starting with the most significant nibble of the 12 bit value calculated in Step b), function OR this value to 30 hex after bit shifting the nibble to the least significant position to produce the first check sum character,
  - D) repeat the step c) for the last two nibbles to produce the second and third check sum characters,

e) add together the ASCII value of each even character position starting with the first character of the second set and continuing to the end of the third set,

F)truncate the result to 12 binary bits if necessary (FFFhex),

G)repeat steps c)and d)using the result from step f)instead of step b)to produce the final three characters of the check sum.

46. A system as claimed in claim 41 in which the command message is transmitted more than once to each controller.
47. A system for controlling the supply of electric power to customers of a utility supply company comprising providing a data centre through which the utility company can make changes thereto, by causing the data centre to generate control messages when a change in customer requirements is required, transferring said control messages to a paging network provider to cause said messages to be transmitted to a paging receiver contained within a remote controller at the customer=s premises, said messages when received by said controller being effective to cause the controller to effect the function contained in the message.
48. A system as claimed in claim 47 in which the Utility has access to a data base at the data centre to update customer records.
49. A system as claimed in claim 47 in which the utility transmits information to the data centre to update customer information in a data base or for operatives at the data centre to update in the database.



50. A message structure for sending commands to a remote controller, the message structure comprising a first set of ASCII check sum characters, followed by a second set of ASCII sub address characters, and third set of ASCII command message characters.
51. A message structure as claimed in claim 50 in which the first set comprises six characters.
52. A message structure as claimed in claim 50 in which the second set comprises eight characters.
53. A message structure as claimed in claim 50 in which the third set is a variable length string of characters.
54. A message structure as claimed in claim 51 in which the second set comprises eight characters and the third set is a variable length string of characters in which the check sum is calculated according a method having the following steps:
  - a) add together the ASCII value of each odd character position starting with the first character of the second set and continuing to the end of the third set,
  - b) truncate the result to 12 binary bits if necessary ( FFF hex),
  - C) starting with the most significant nibble of the 12 bit value calculated in Step b), function OR this value to 30 hex after bit shifting the nibble to the least significant position to produce the first check sum character,
  - D)repeat the step c) for the last two nibbles to produce the second and third check sum characters,

e) add together the ASCII value of each even character position starting with the first character of the second set and continuing to the end of the third set,

F) truncate the result to 12 binary bits if necessary (FFFhex),

G) repeat steps c) and d) using the result from step f) instead of step b) to produce the final three characters of the check sum.

55. A method for remotely controlling the supply of electric power to customer premises, comprising the steps of;

providing a control computer;

sending instructions to the control computer to generate control instructions;

transmitting said control instructions from said control computer by means of a paging service; and

receiving and acting on said control instructions at a customer-premises power-switching arrangement coupled to a paging receiver.